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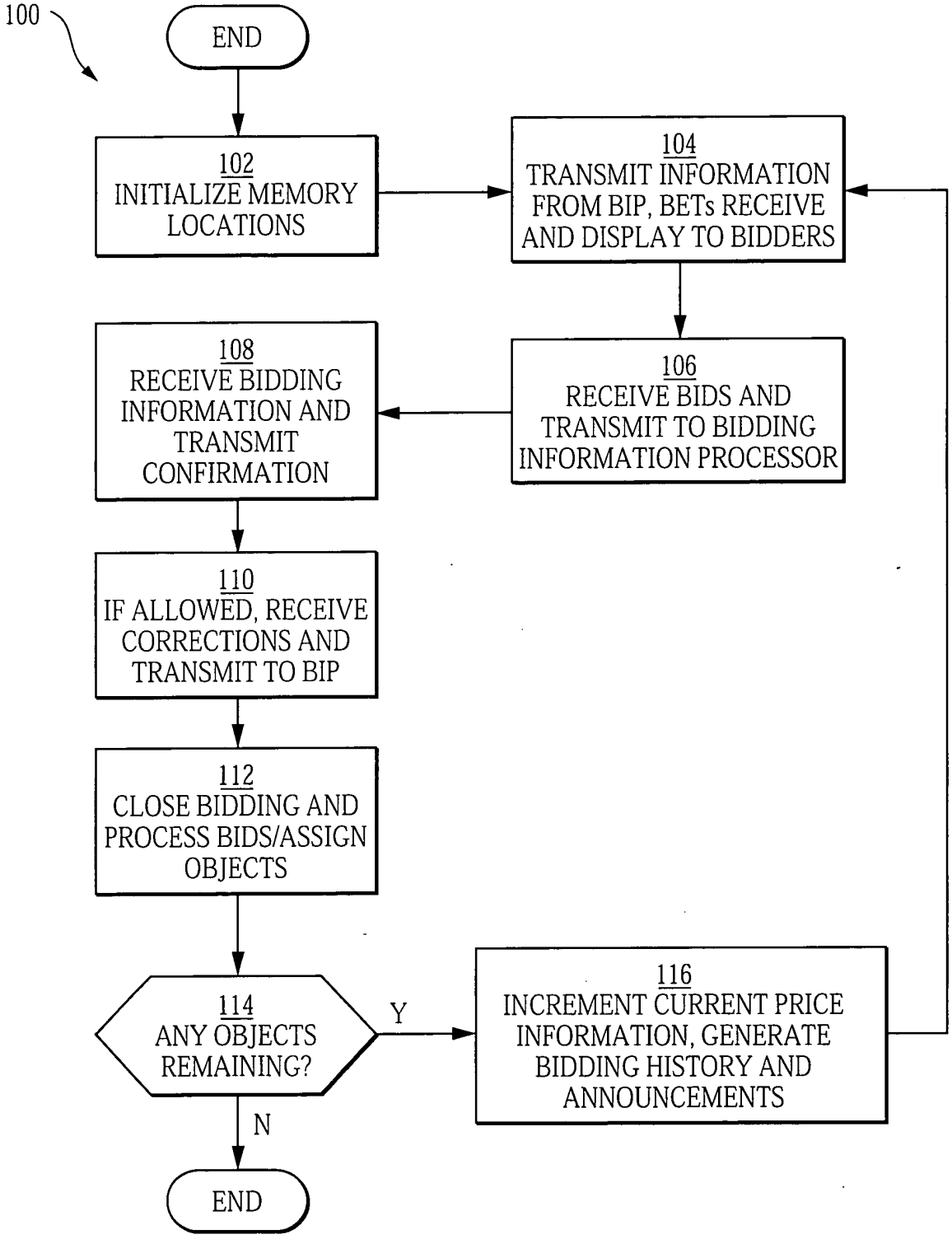

FIG. 1a
(PRIOR ART)

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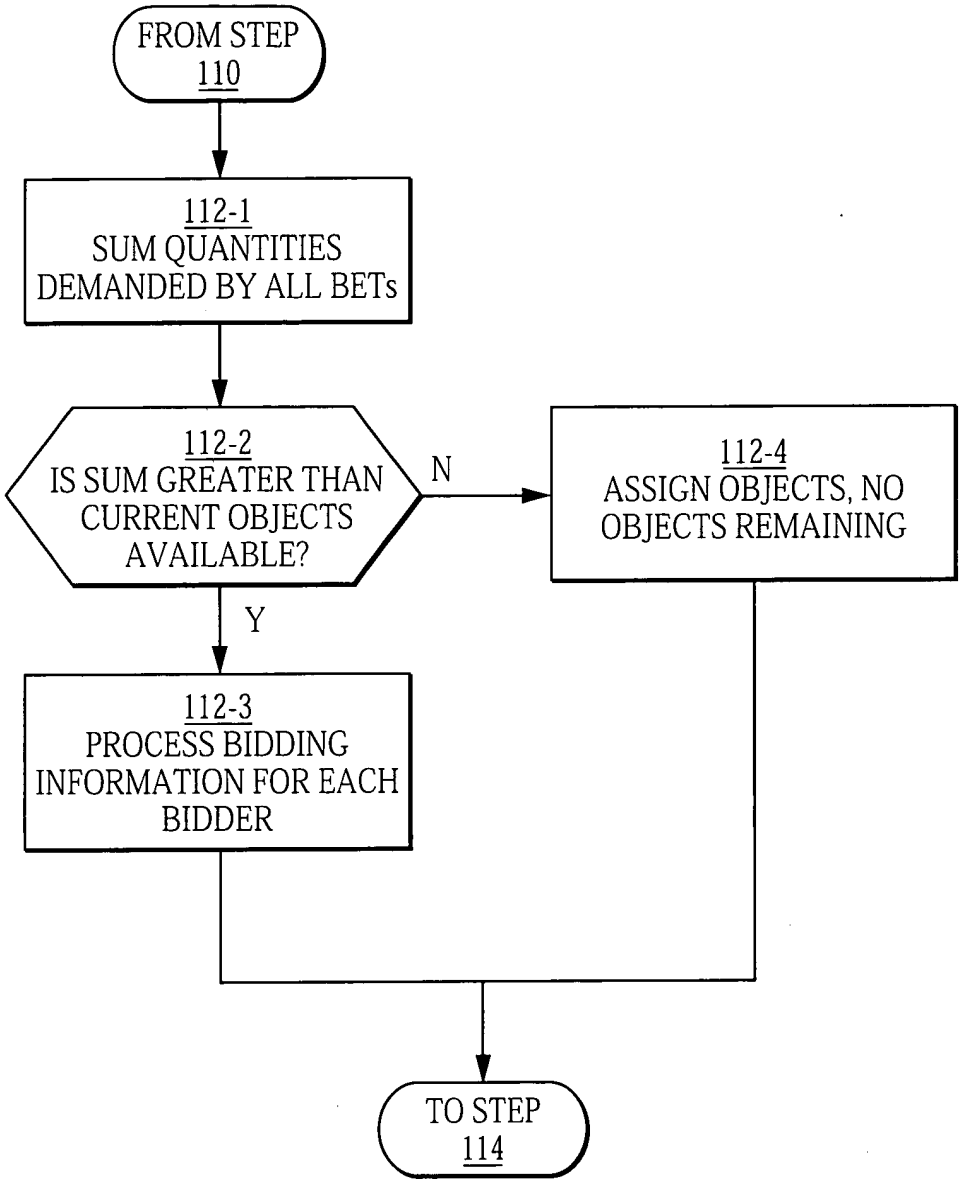
FROM STEP 110
112-1 SUM QUANTITIES DEMANDED BY ALL BETs
112-2 IS SUM GREATER THAN CURRENT OBJECTS AVAILABLE?
N
112-4 ASSIGN OBJECTS, NO OBJECTS REMAINING
Y
112-3 PROCESS BIDDING INFORMATION FOR EACH BIDDER
TO STEP 114

FIG. 1b
(PRIOR ART)

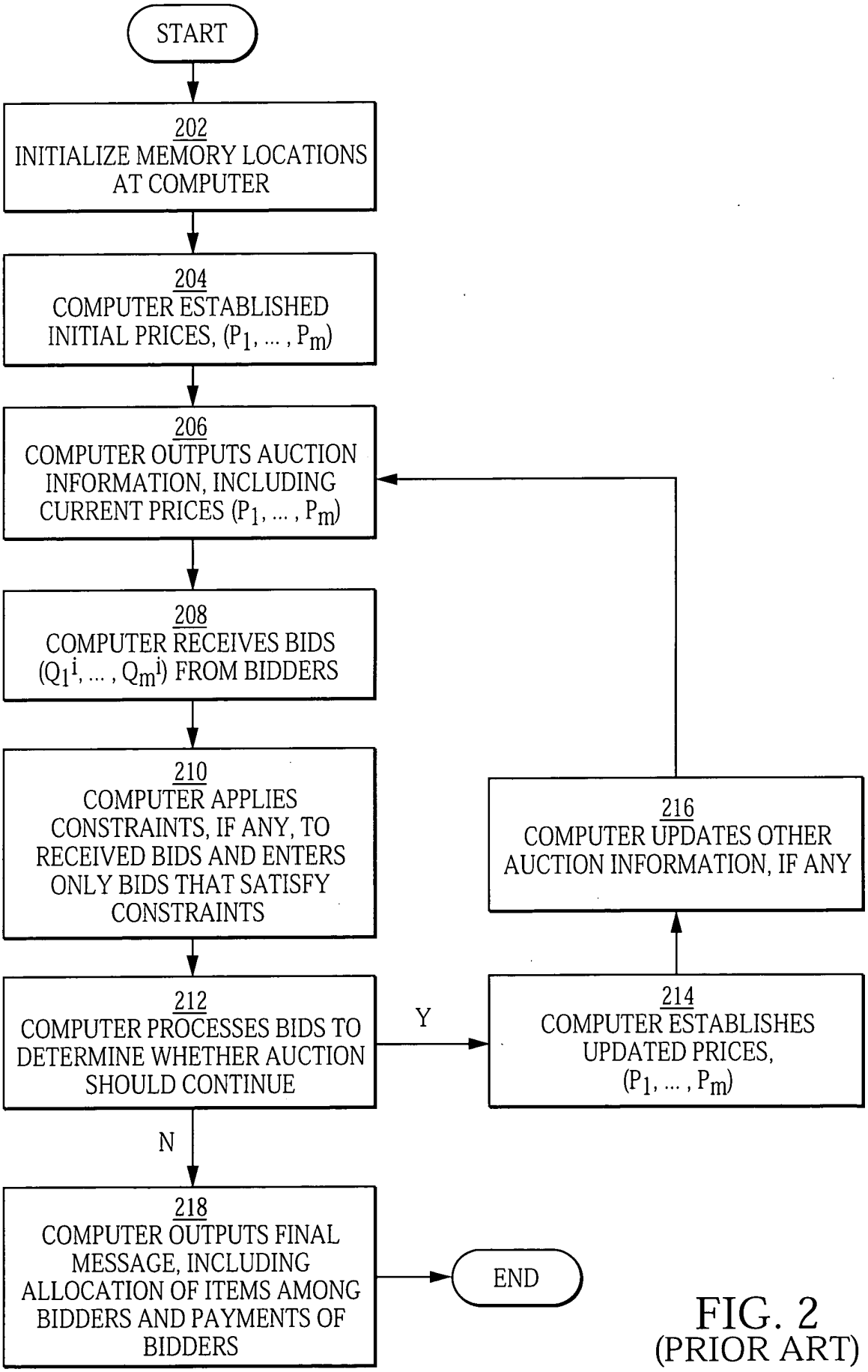
START
202
INITIALIZE MEMORY LOCATIONS AT COMPUTER
204
COMPUTER ESTABLISHED INITIAL PRICES, (P_1, ... , P_m)
206
COMPUTER OUTPUTS AUCTION INFORMATION, INCLUDING CURRENT PRICES (P_1, ... , P_m)
208
COMPUTER RECEIVES BIDS (Q_1^i, ... , Q_m^i) FROM BIDDERS
210
COMPUTER APPLIES CONSTRAINTS, IF ANY, TO RECEIVED BIDS AND ENTERS ONLY BIDS THAT SATISFY CONSTRAINTS
212
COMPUTER PROCESSES BIDS TO DETERMINE WHETHER AUCTION SHOULD CONTINUE
Y
214
COMPUTER ESTABLISHES UPDATED PRICES, (P_1, ... , P_m)
216
COMPUTER UPDATES OTHER AUCTION INFORMATION, IF ANY
N
218
COMPUTER OUTPUTS FINAL MESSAGE, INCLUDING ALLOCATION OF ITEMS AMONG BIDDERS AND PAYMENTS OF BIDDERS
END

FIG. 2
(PRIOR ART)

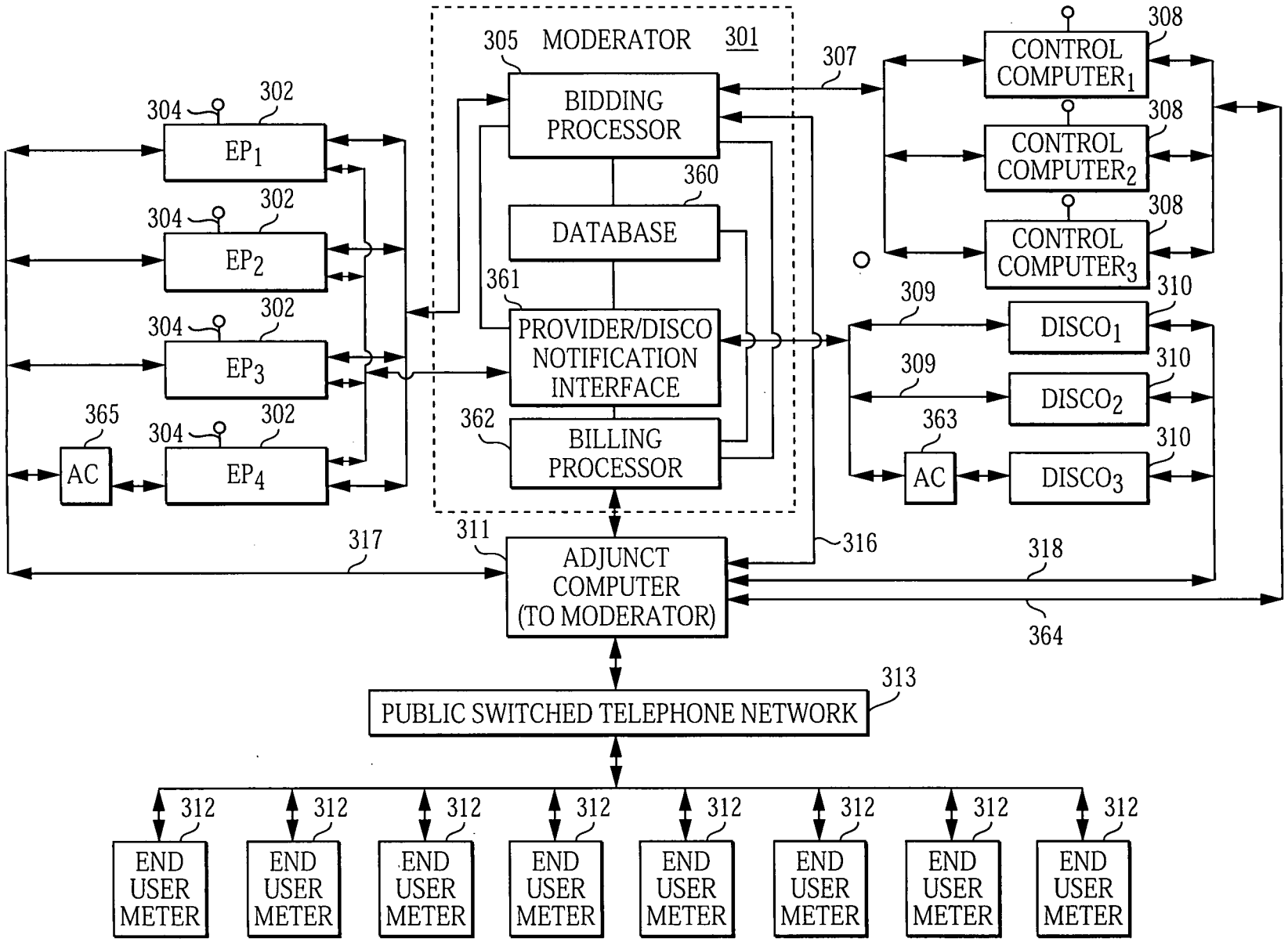

FIG. 3a
(PRIOR ART)

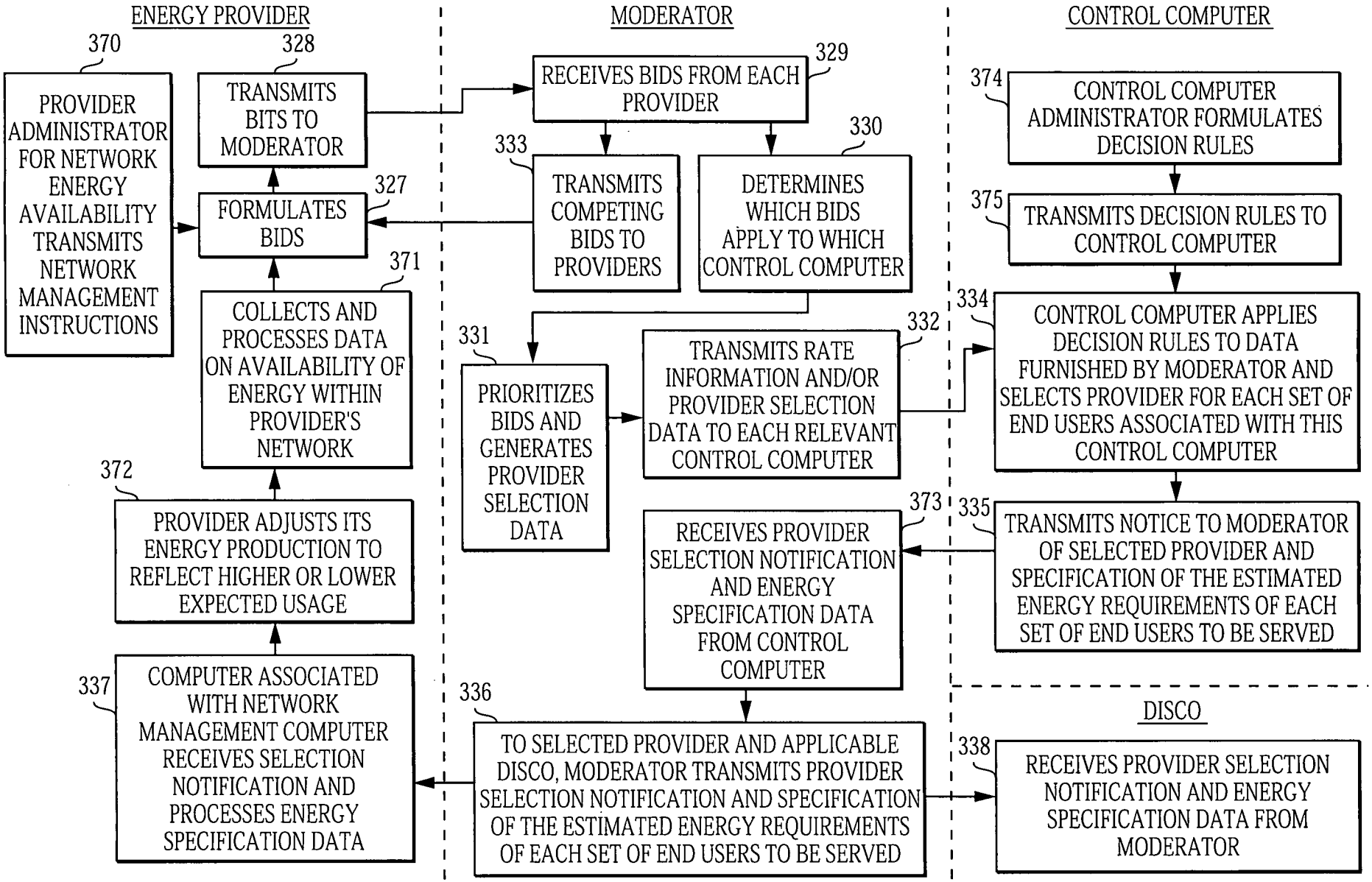
ENERGY PROVIDER
MODERATOR
CONTROL COMPUTER
370
PROVIDER ADMINISTRATOR FOR NETWORK ENERGY AVAILABILITY TRANSMITS NETWORK MANAGEMENT INSTRUCTIONS
328
TRANSMITS BITS TO MODERATOR
329
RECEIVES BIDS FROM EACH PROVIDER
374
CONTROL COMPUTER ADMINISTRATOR FORMULATES DECISION RULES
333
TRANSMITS COMPETING BIDS TO PROVIDERS
330
DETERMINES WHICH BIDS APPLY TO WHICH CONTROL COMPUTER
375
TRANSMITS DECISION RULES TO CONTROL COMPUTER
327
FORMULATES BIDS
371
COLLECTS AND PROCESSES DATA ON AVAILABILITY OF ENERGY WITHIN PROVIDER'S NETWORK
331
PRIORITIZES BIDS AND GENERATES PROVIDER SELECTION DATA
332
TRANSMITS RATE INFORMATION AND/OR PROVIDER SELECTION DATA TO EACH RELEVANT CONTROL COMPUTER
334
CONTROL COMPUTER APPLIES DECISION RULES TO DATA FURNISHED BY MODERATOR AND SELECTS PROVIDER FOR EACH SET OF END USERS ASSOCIATED WITH THIS CONTROL COMPUTER
372
PROVIDER ADJUSTS ITS ENERGY PRODUCTION TO REFLECT HIGHER OR LOWER EXPECTED USAGE
373
RECEIVES PROVIDER SELECTION NOTIFICATION AND ENERGY SPECIFICATION DATA FROM CONTROL COMPUTER
335
TRANSMITS NOTICE TO MODERATOR OF SELECTED PROVIDER AND SPECIFICATION OF THE ESTIMATED ENERGY REQUIREMENTS OF EACH SET OF END USERS TO BE SERVED
337
COMPUTER ASSOCIATED WITH NETWORK MANAGEMENT COMPUTER RECEIVES SELECTION NOTIFICATION AND PROCESSES ENERGY SPECIFICATION DATA
336
TO SELECTED PROVIDER AND APPLICABLE DISCO, MODERATOR TRANSMITS PROVIDER SELECTION NOTIFICATION AND SPECIFICATION OF THE ESTIMATED ENERGY REQUIREMENTS OF EACH SET OF END USERS TO BE SERVED
DISCO
338
RECEIVES PROVIDER SELECTION NOTIFICATION AND ENERGY SPECIFICATION DATA FROM MODERATOR

FIG. 3b
(PRIOR ART)

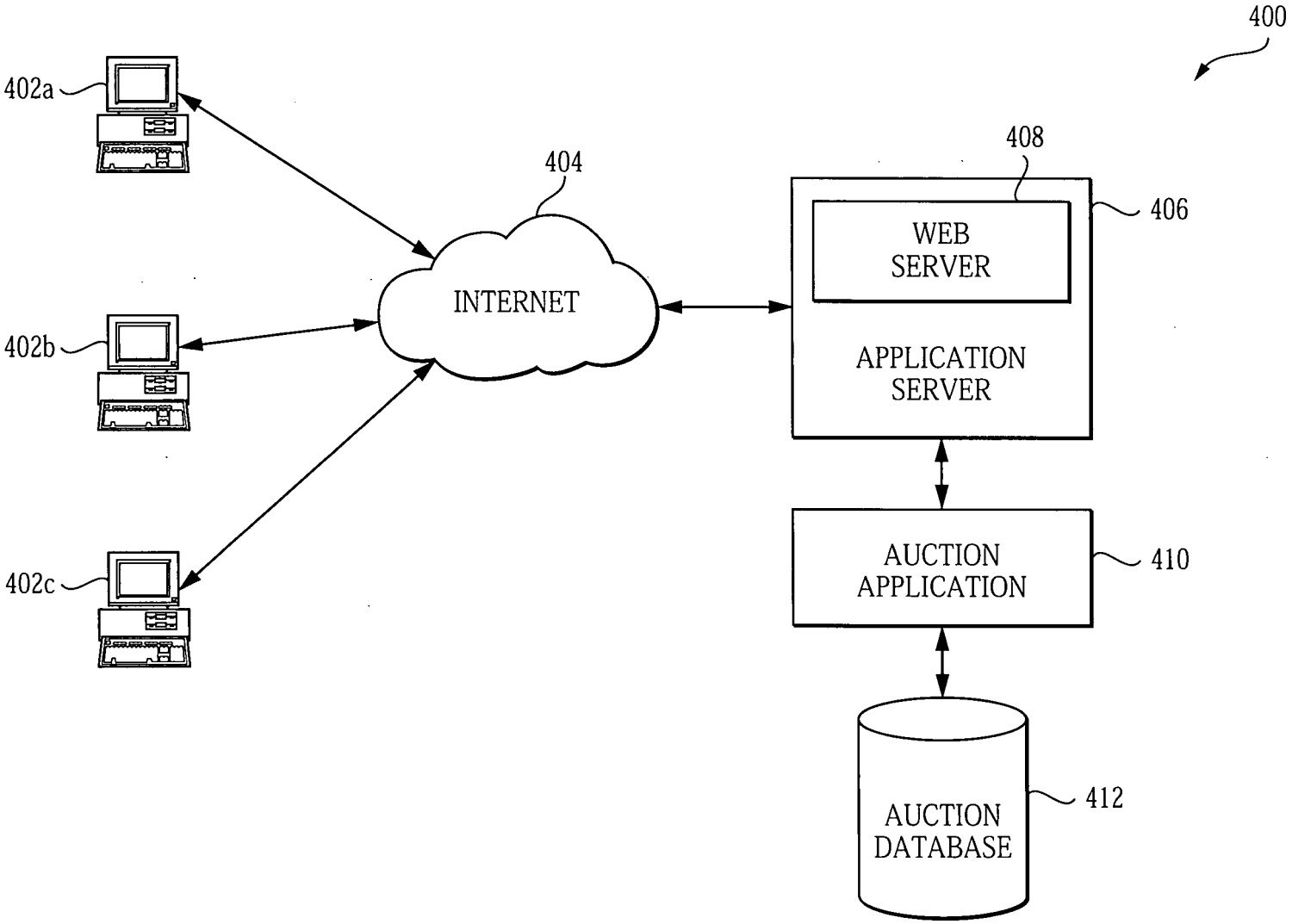
400
402a
402b
402c
404
INTERNET
408
406
WEB
SERVER
APPLICATION
SERVER
AUCTION
APPLICATION
410
AUCTION
DATABASE
412

FIG. 4

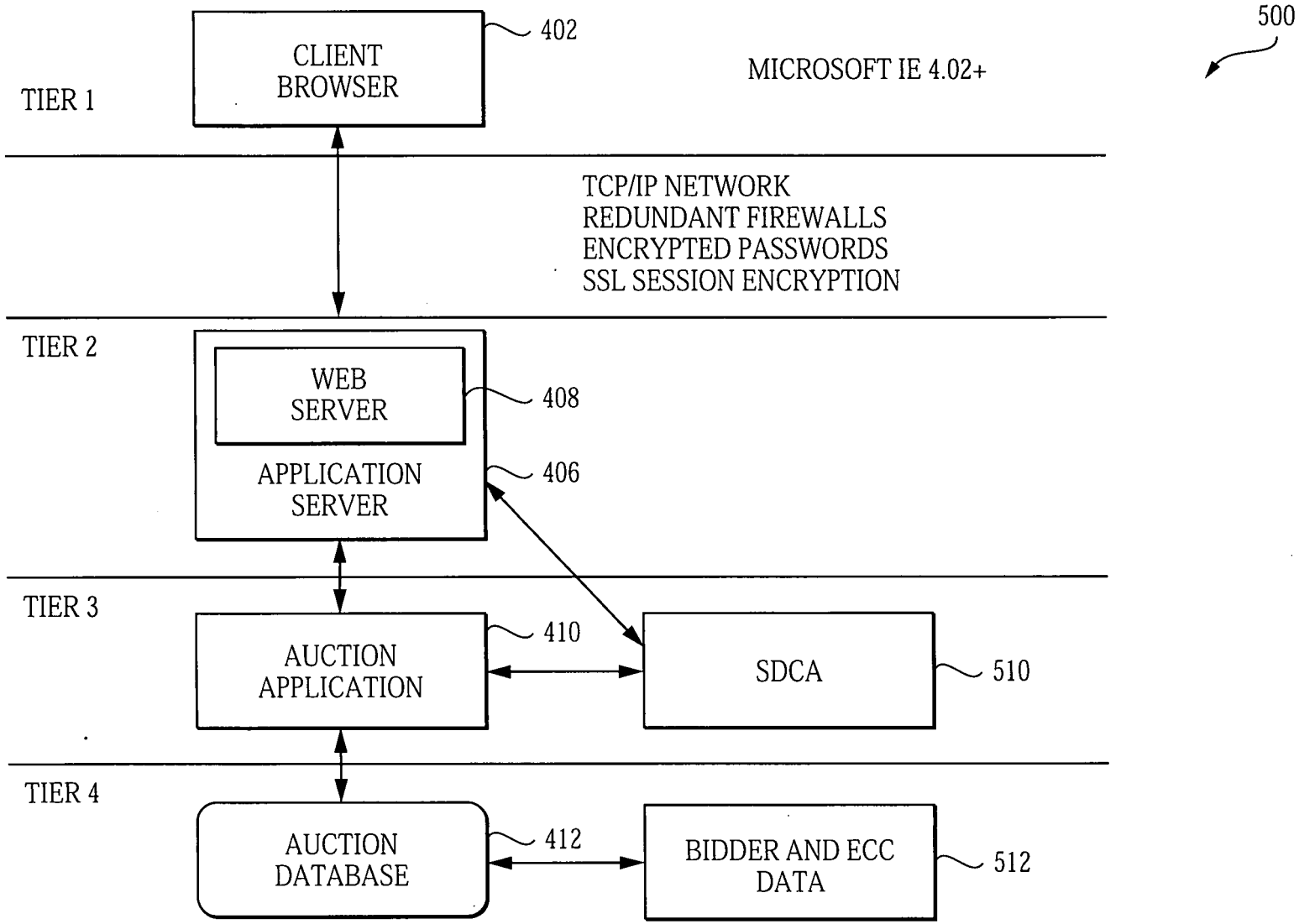
500
TIER 1
CLIENT BROWSER
402
MICROSOFT IE 4.02+
TCP/IP NETWORK
REDUNDANT FIREWALLS
ENCRYPTED PASSWORDS
SSL SESSION ENCRYPTION
TIER 2
WEB SERVER
408
APPLICATION SERVER
406
TIER 3
AUCTION APPLICATION
410
SDCA
510
TIER 4
AUCTION DATABASE
412
BIDDER AND ECC DATA
512

FIG. 5

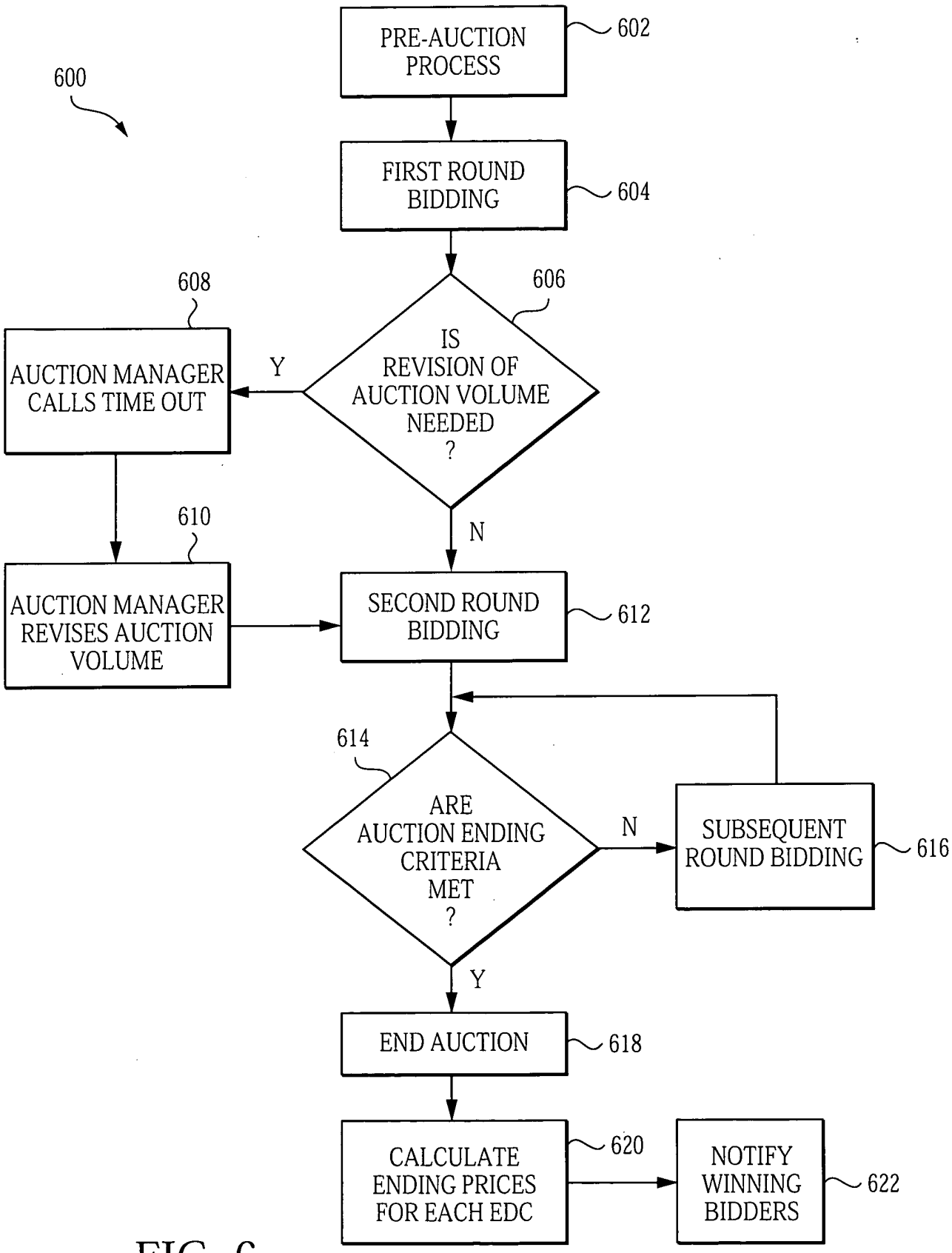
600
PRE-AUCTION PROCESS
602
FIRST ROUND BIDDING
604
606
IS REVISION OF AUCTION VOLUME NEEDED ?
608
Y
AUCTION MANAGER CALLS TIME OUT
610
AUCTION MANAGER REVISES AUCTION VOLUME
N
SECOND ROUND BIDDING
612
614
ARE AUCTION ENDING CRITERIA MET ?
N
SUBSEQUENT ROUND BIDDING
616
Y
END AUCTION
618
CALCULATE ENDING PRICES FOR EACH EDC
620
NOTIFY WINNING BIDDERS
622

FIG. 6

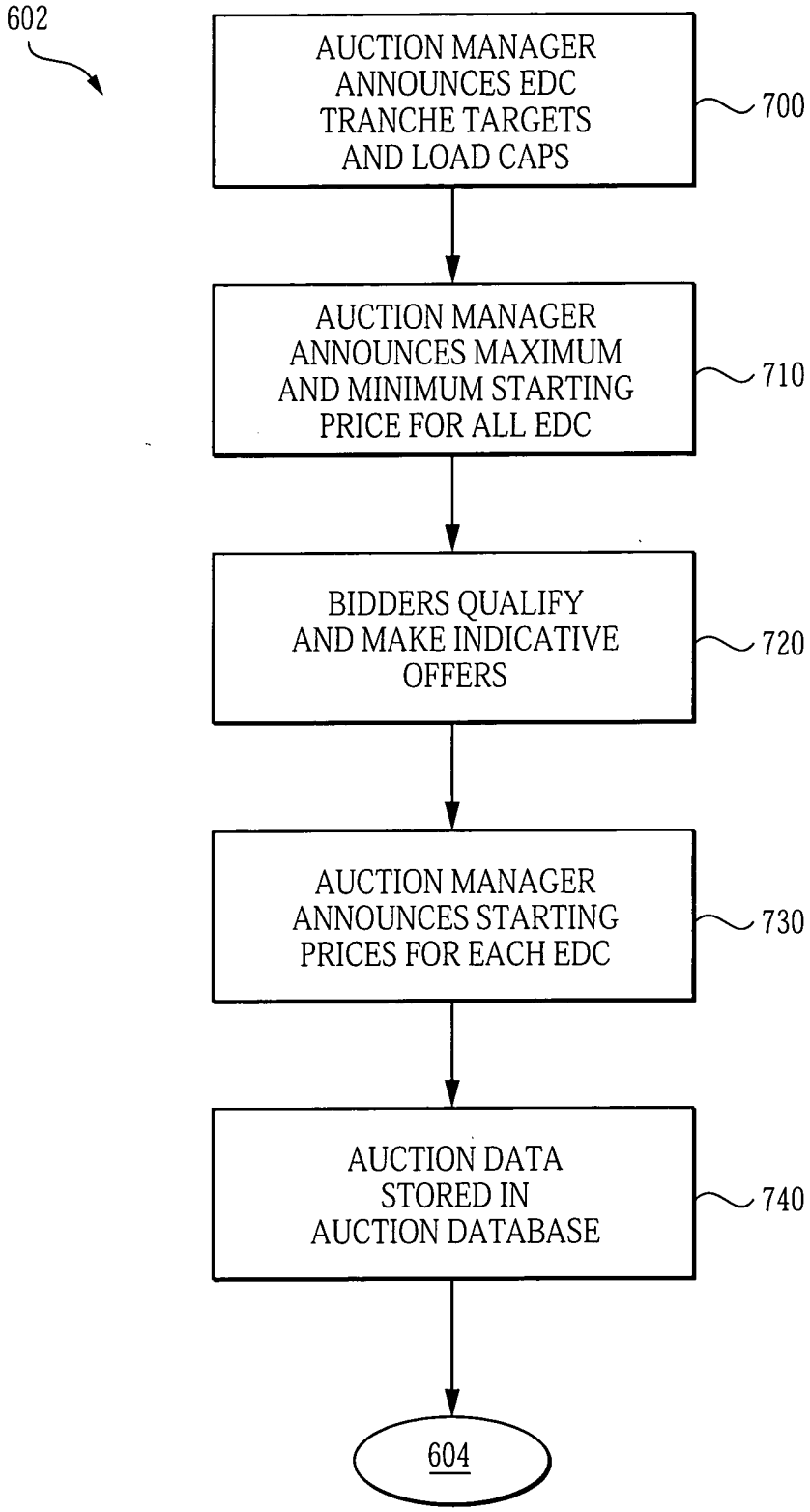
602
AUCTION MANAGER ANNOUNCES EDC TRANCHE TARGETS AND LOAD CAPS
700
AUCTION MANAGER ANNOUNCES MAXIMUM AND MINIMUM STARTING PRICE FOR ALL EDC
710
BIDDERS QUALIFY AND MAKE INDICATIVE OFFERS
720
AUCTION MANAGER ANNOUNCES STARTING PRICES FOR EACH EDC
730
AUCTION DATA STORED IN AUCTION DATABASE
740
604

FIG. 7

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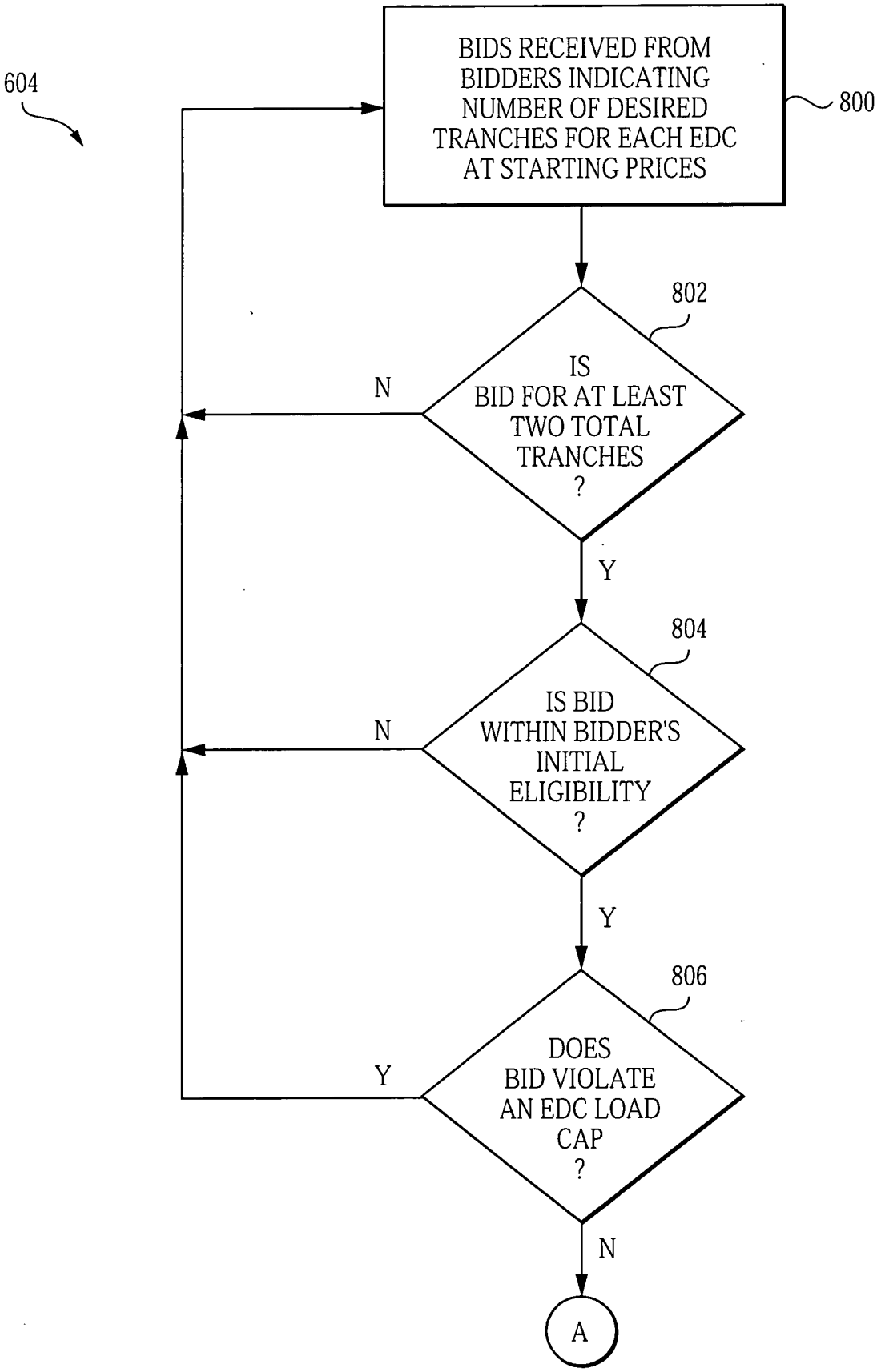

FIG. 8A

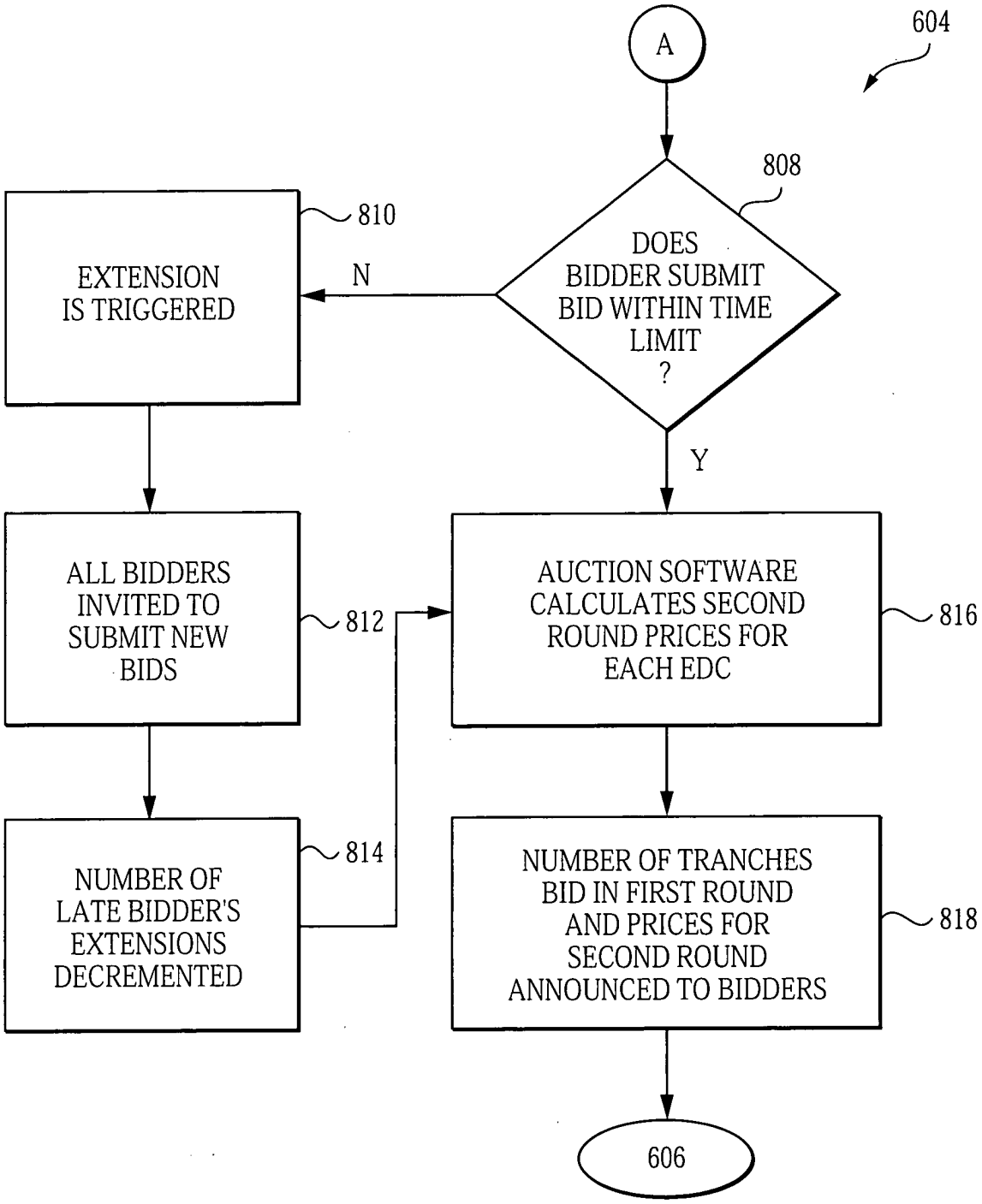
604
A
808
DOES BIDDER SUBMIT BID WITHIN TIME LIMIT ?
N
Y
810
EXTENSION IS TRIGGERED
ALL BIDDERS INVITED TO SUBMIT NEW BIDS
812
NUMBER OF LATE BIDDER'S EXTENSIONS DECREMENTED
814
AUCTION SOFTWARE CALCULATES SECOND ROUND PRICES FOR EACH EDC
816
NUMBER OF TRANCHES BID IN FIRST ROUND AND PRICES FOR SECOND ROUND ANNOUNCED TO BIDDERS
818
606

FIG. 8B

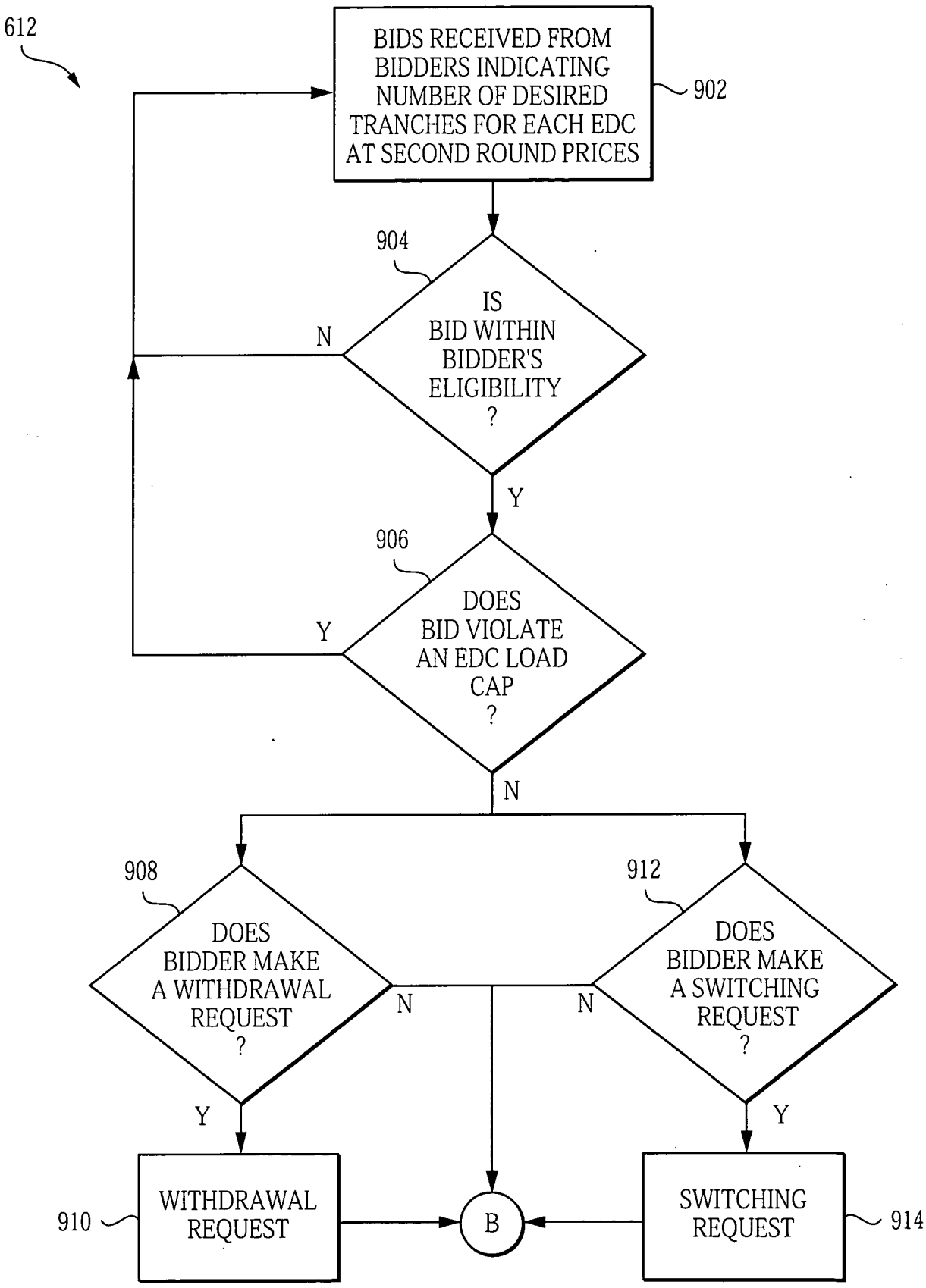
612
BIDS RECEIVED FROM BIDDERS INDICATING NUMBER OF DESIRED TRANCHES FOR EACH EDC AT SECOND ROUND PRICES
902
904
IS BID WITHIN BIDDER'S ELIGIBILITY ?
N
Y
906
DOES BID VIOLATE AN EDC LOAD CAP ?
Y
N
908
DOES BIDDER MAKE A WITHDRAWAL REQUEST ?
N
Y
912
DOES BIDDER MAKE A SWITCHING REQUEST ?
N
Y
910
WITHDRAWAL REQUEST
B
SWITCHING REQUEST
914

FIG. 9A

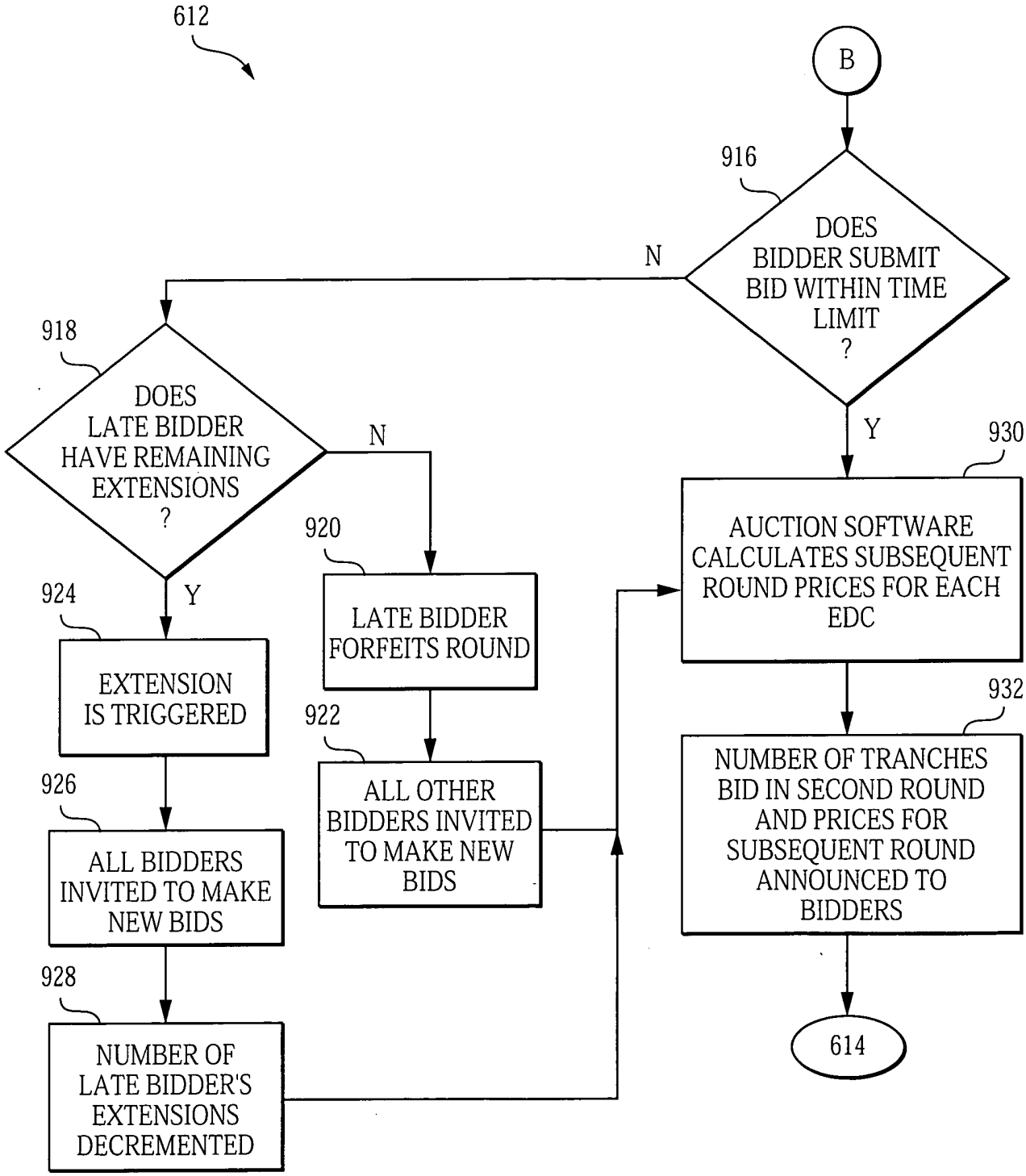
612
B
916
DOES BIDDER SUBMIT BID WITHIN TIME LIMIT ?
N
Y
918
DOES LATE BIDDER HAVE REMAINING EXTENSIONS ?
N
Y
920
LATE BIDDER FORFEITS ROUND
922
ALL OTHER BIDDERS INVITED TO MAKE NEW BIDS
924
EXTENSION IS TRIGGERED
926
ALL BIDDERS INVITED TO MAKE NEW BIDS
928
NUMBER OF LATE BIDDER'S EXTENSIONS DECREMENTED
930
AUCTION SOFTWARE CALCULATES SUBSEQUENT ROUND PRICES FOR EACH EDC
932
NUMBER OF TRANCHES BID IN SECOND ROUND AND PRICES FOR SUBSEQUENT ROUND ANNOUNCED TO BIDDERS
614

FIG. 9B

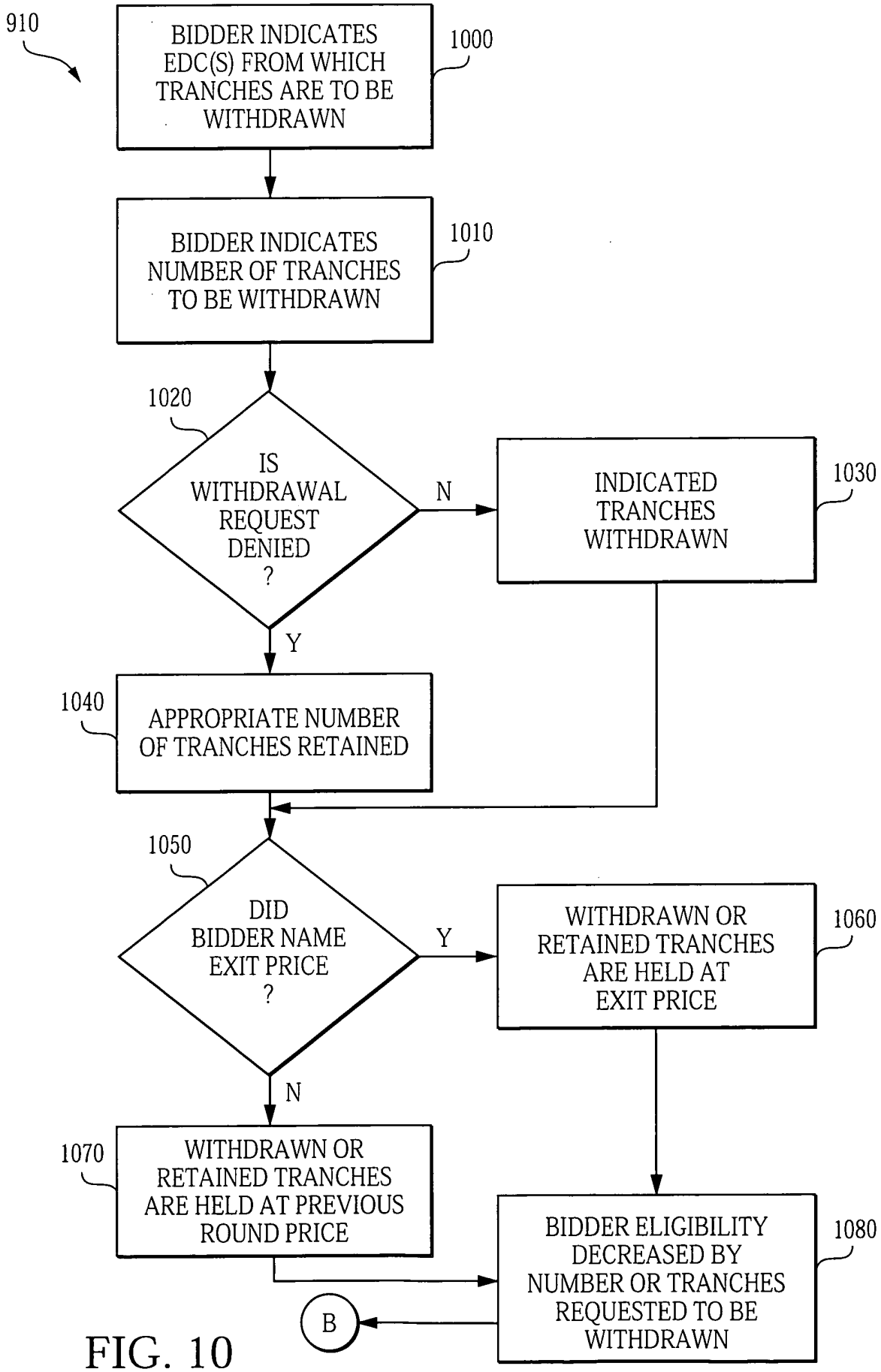
910
BIDDER INDICATES EDC(S) FROM WHICH TRANCHES ARE TO BE WITHDRAWN
1000
BIDDER INDICATES NUMBER OF TRANCHES TO BE WITHDRAWN
1010
1020
IS WITHDRAWAL REQUEST DENIED ?
N
INDICATED TRANCHES WITHDRAWN
1030
Y
1040
APPROPRIATE NUMBER OF TRANCHES RETAINED
1050
DID BIDDER NAME EXIT PRICE ?
Y
WITHDRAWN OR RETAINED TRANCHES ARE HELD AT EXIT PRICE
1060
N
1070
WITHDRAWN OR RETAINED TRANCHES ARE HELD AT PREVIOUS ROUND PRICE
BIDDER ELIGIBILITY DECREASED BY NUMBER OR TRANCHES REQUESTED TO BE WITHDRAWN
1080
B

FIG. 10

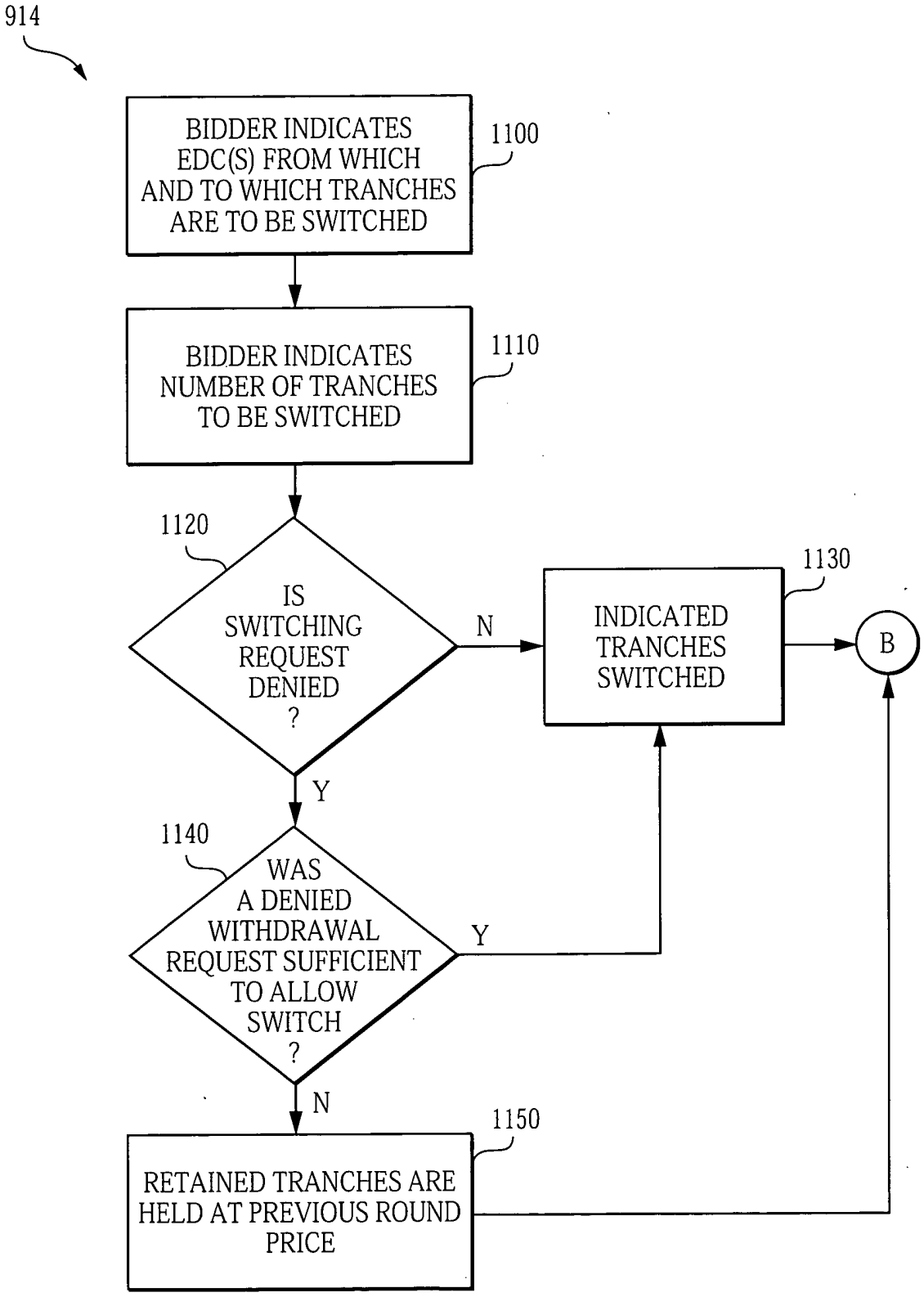
914
BIDDER INDICATES EDC(S) FROM WHICH AND TO WHICH TRANCHES ARE TO BE SWITCHED
1100
BIDDER INDICATES NUMBER OF TRANCHES TO BE SWITCHED
1110
1120
IS SWITCHING REQUEST DENIED ?
N
1130
INDICATED TRANCHES SWITCHED
B
Y
1140
WAS A DENIED WITHDRAWAL REQUEST SUFFICIENT TO ALLOW SWITCH ?
Y
N
1150
RETAINED TRANCHES ARE HELD AT PREVIOUS ROUND PRICE

FIG. 11

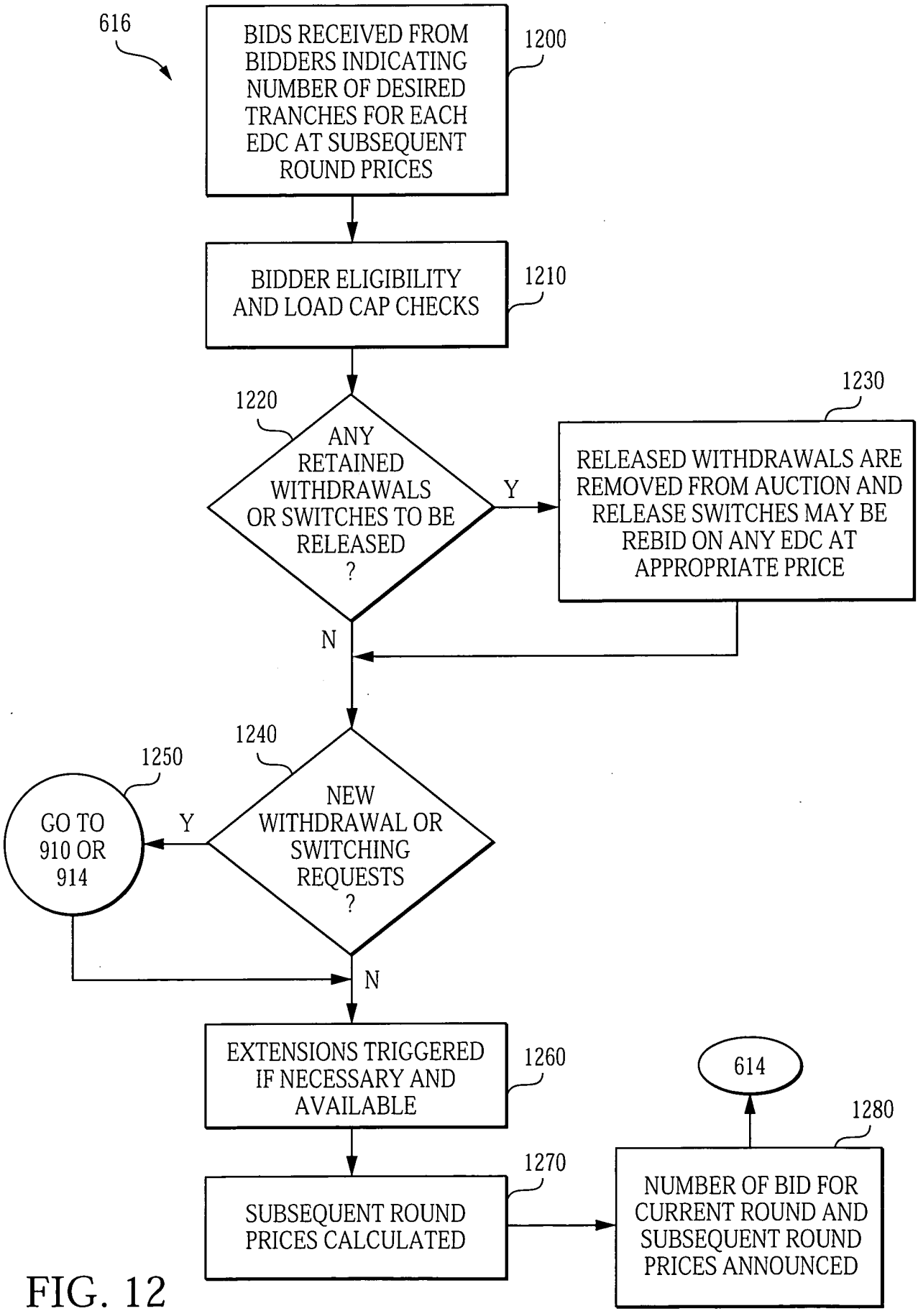
616
BIDS RECEIVED FROM BIDDERS INDICATING NUMBER OF DESIRED TRANCHES FOR EACH EDC AT SUBSEQUENT ROUND PRICES
1200
BIDDER ELIGIBILITY AND LOAD CAP CHECKS
1210
1220
ANY RETAINED WITHDRAWALS OR SWITCHES TO BE RELEASED ?
Y
1230
RELEASED WITHDRAWALS ARE REMOVED FROM AUCTION AND RELEASE SWITCHES MAY BE REBID ON ANY EDC AT APPROPRIATE PRICE
N
1240
NEW WITHDRAWAL OR SWITCHING REQUESTS ?
Y
1250
GO TO 910 OR 914
N
EXTENSIONS TRIGGERED IF NECESSARY AND AVAILABLE
1260
SUBSEQUENT ROUND PRICES CALCULATED
1270
614
1280
NUMBER OF BID FOR CURRENT ROUND AND SUBSEQUENT ROUND PRICES ANNOUNCED

FIG. 12

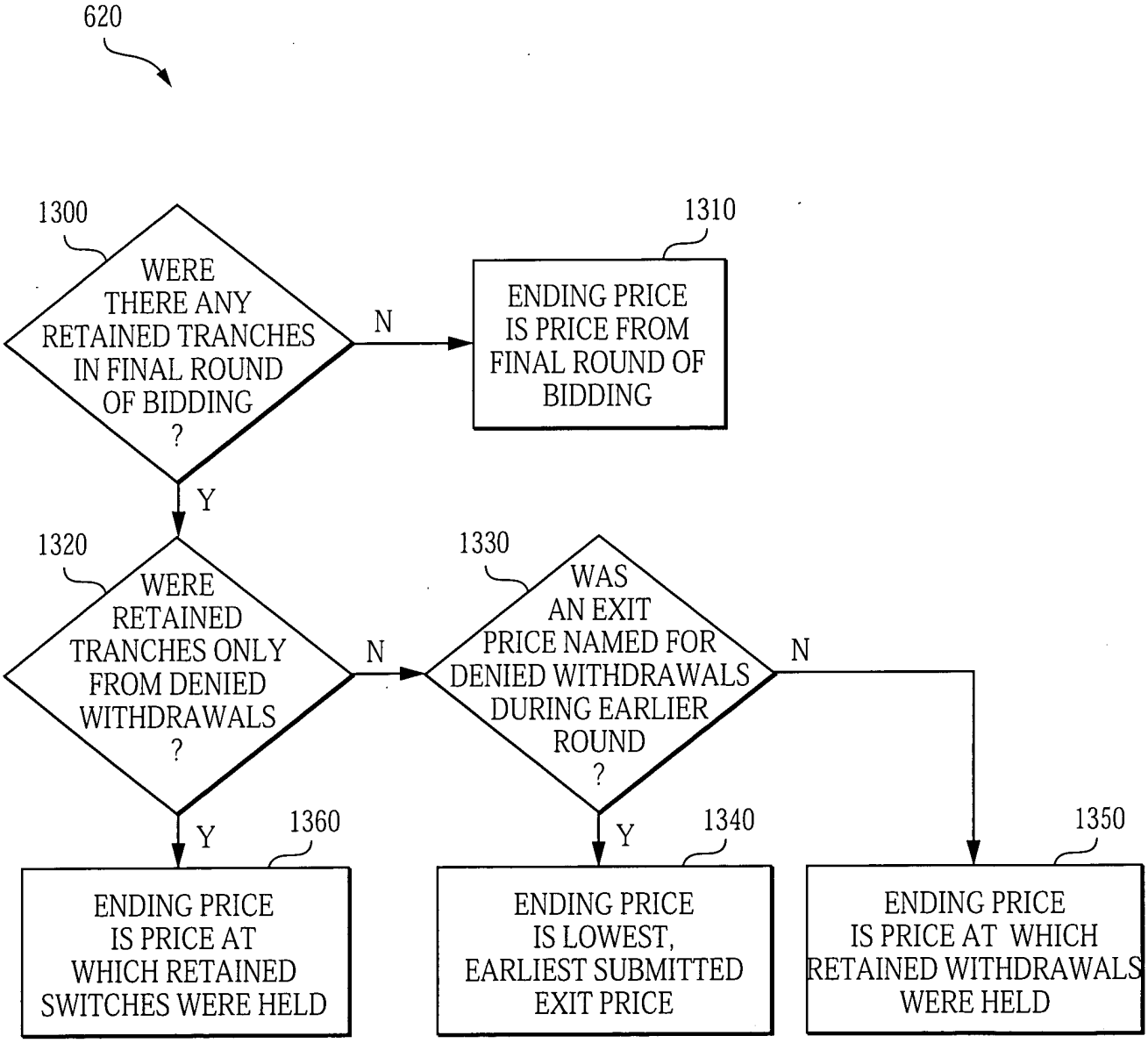
620
1300
WERE THERE ANY RETAINED TRANCHES IN FINAL ROUND OF BIDDING ?
N
1310
ENDING PRICE IS PRICE FROM FINAL ROUND OF BIDDING
Y
1320
WERE RETAINED TRANCHES ONLY FROM DENIED WITHDRAWALS ?
N
1330
WAS AN EXIT PRICE NAMED FOR DENIED WITHDRAWALS DURING EARLIER ROUND ?
N
Y
1360
ENDING PRICE IS PRICE AT WHICH RETAINED SWITCHES WERE HELD
Y
1340
ENDING PRICE IS LOWEST, EARLIEST SUBMITTED EXIT PRICE
1350
ENDING PRICE IS PRICE AT WHICH RETAINED WITHDRAWALS WERE HELD

FIG. 13

SAMPLE RESULTS

ROUND 1	PRICES	BIDS
	6.55	25
	6.55	15

ROUND 2	PRICES	BIDS
	6.39	25
	6.45	15

ROUND 3	PRICES	BIDS
	6.23	22
	6.35	18

ABC - 10 SLICES AVAILABLE

XYZ - 10 SLICES AVAILABLE

ROUND 4	PRICES	BIDS
	6.07	18
	6.22	18

ROUND 5	PRICES	BIDS
	5.95	16
	6.10	20

FIG. 14

SAMPLE ROUND REPORT WITH MINIMUM INFORMATION

ROUND REPORT: ROUND 4

TOTAL SLICES SUBSCRIBED: 35-40

EDC	ROUND 5 PRICE /kWh
ABC	5.95¢
XYZ	6.10¢

FIG. 15

AUCTION MANAGER'S ROUND REPORT

ROUND 4

	BIDS	
BIDDER	ABC	XYZ
A	3	1
B	2	2
C	5	5
D	0	2
E	2	0
F	4	2
G	1	4
H	1	2
TOTAL	18	18

TOTAL ELIGIBILITY	
FOR ROUND 4:	36
INITIAL ELIGIBILITY:	40

FIG. 16

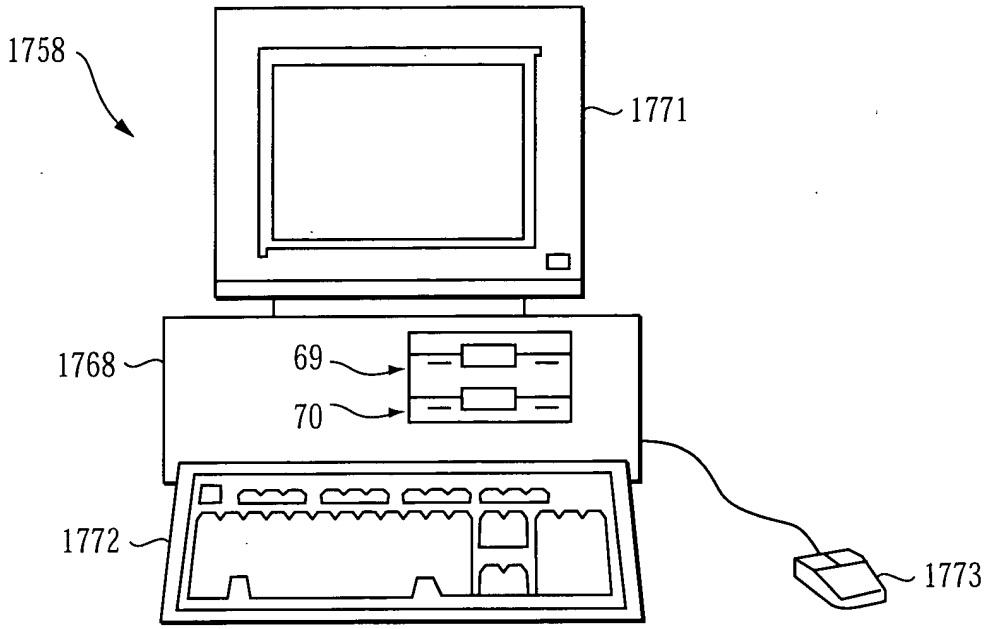
1758
1771
1768
69
70
1772
1773

FIG. 17

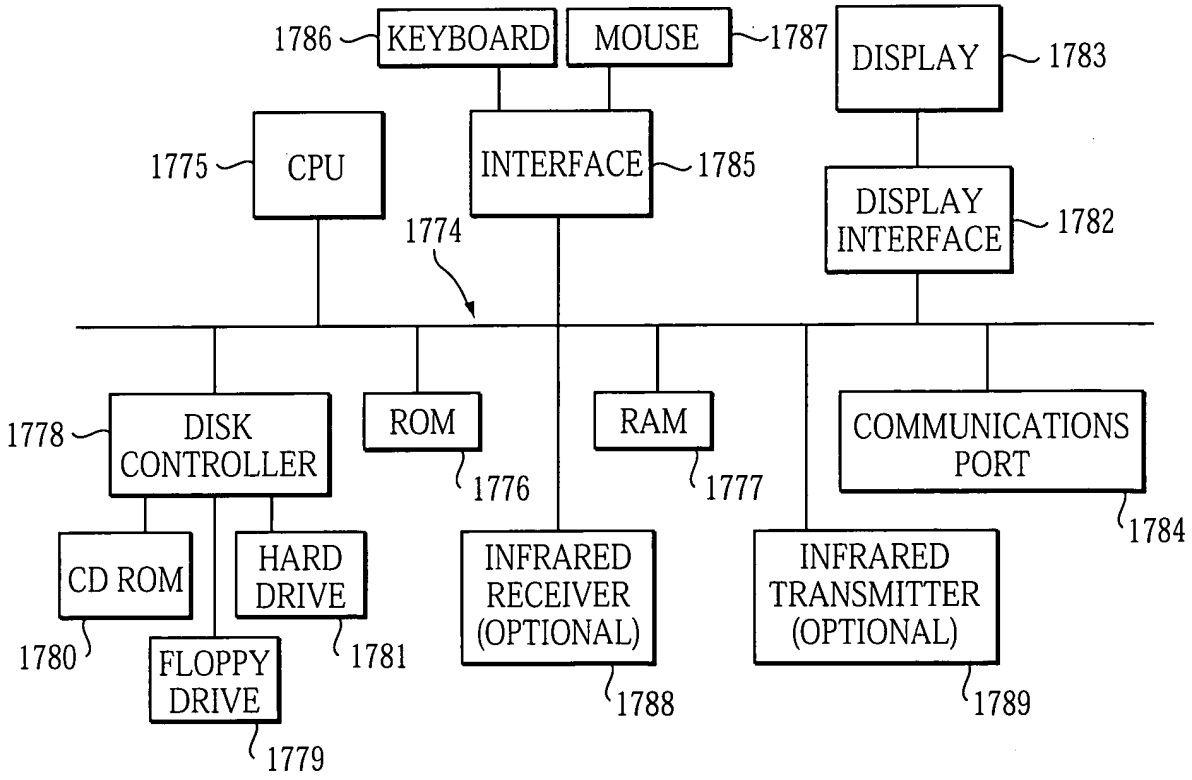
1786
KEYBOARD
MOUSE
1787
DISPLAY
1783
1775
CPU
INTERFACE
1785
DISPLAY INTERFACE
1782
1774
1778
DISK CONTROLLER
ROM
1776
RAM
1777
COMMUNICATIONS PORT
1784
CD ROM
1780
HARD DRIVE
1781
FLOPPY DRIVE
1779
INFRARED RECEIVER (OPTIONAL)
1788
INFRARED TRANSMITTER (OPTIONAL)
1789

FIG. 18

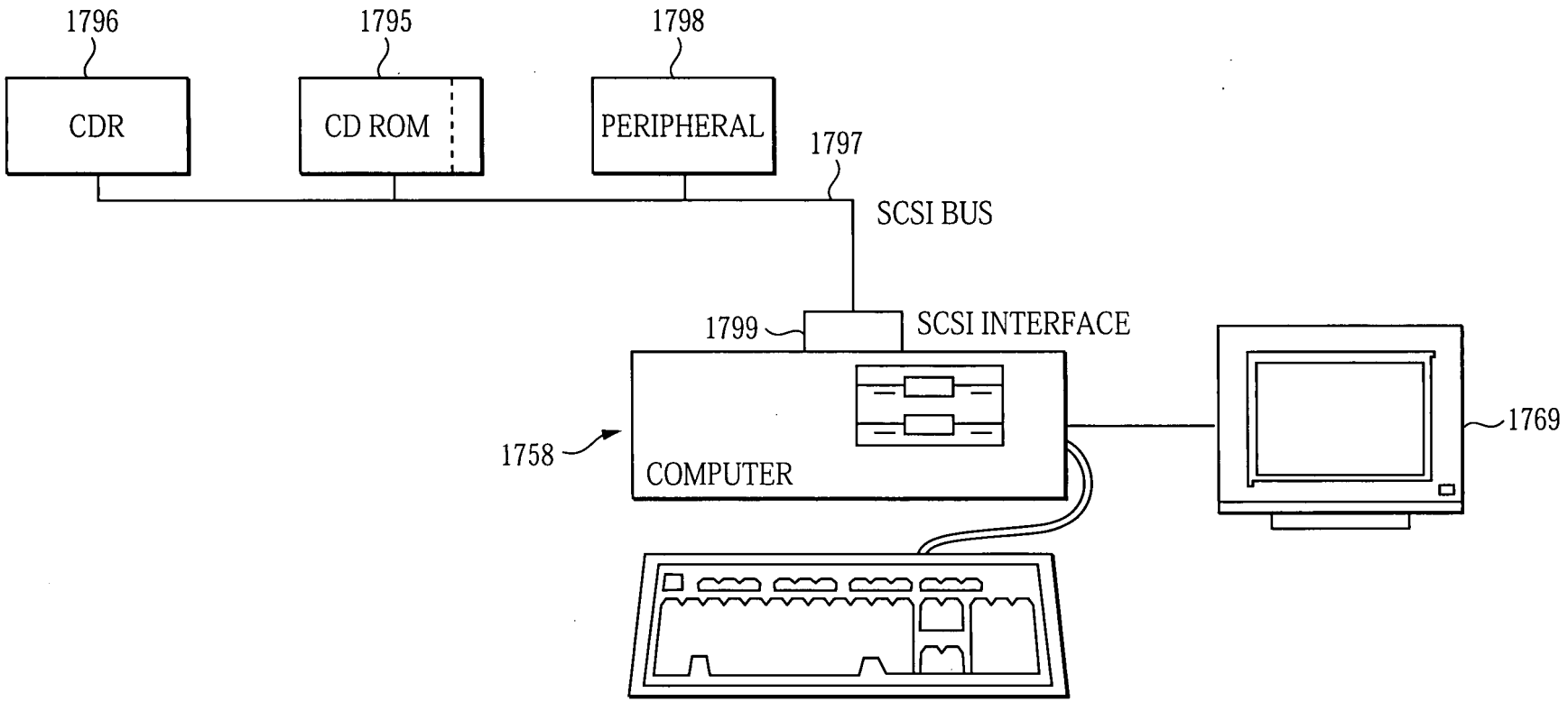
1796
1795
1798
CDR
CD ROM
PERIPHERAL
1797
SCSI BUS
1799
SCSI INTERFACE
1758
COMPUTER
1769

FIG. 19